EE4717/IM4717 Web Application Design Cascading Style Sheets (CSS3)

Lecturer :

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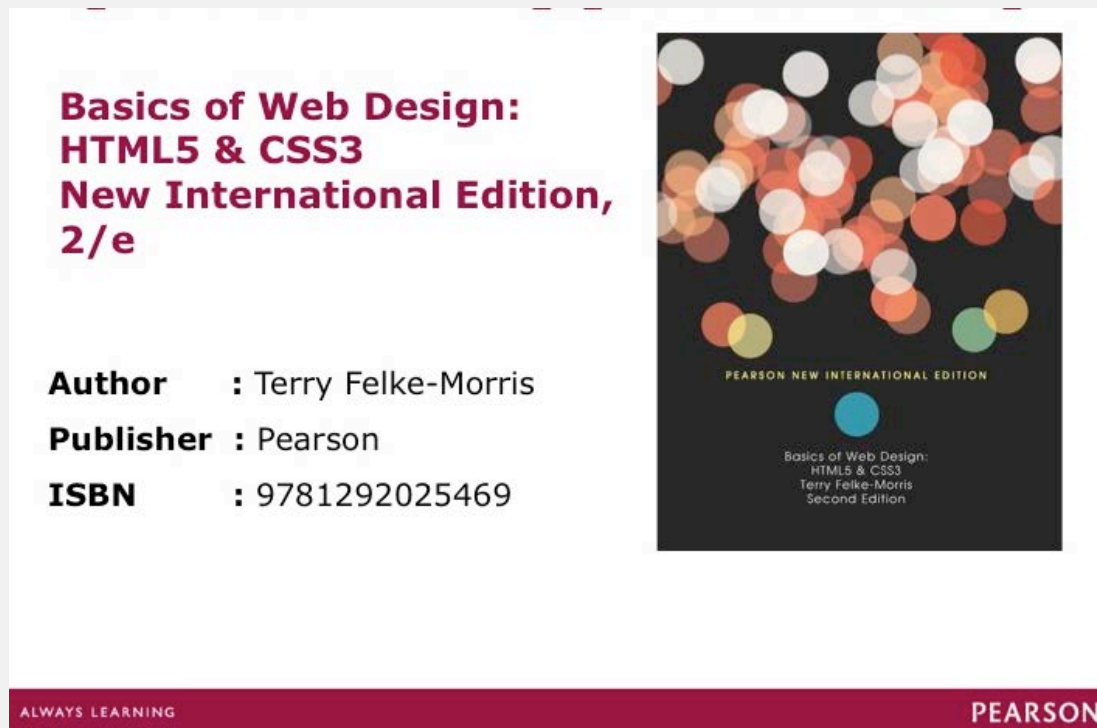E-mail: eykchong@ntu.edu.sg

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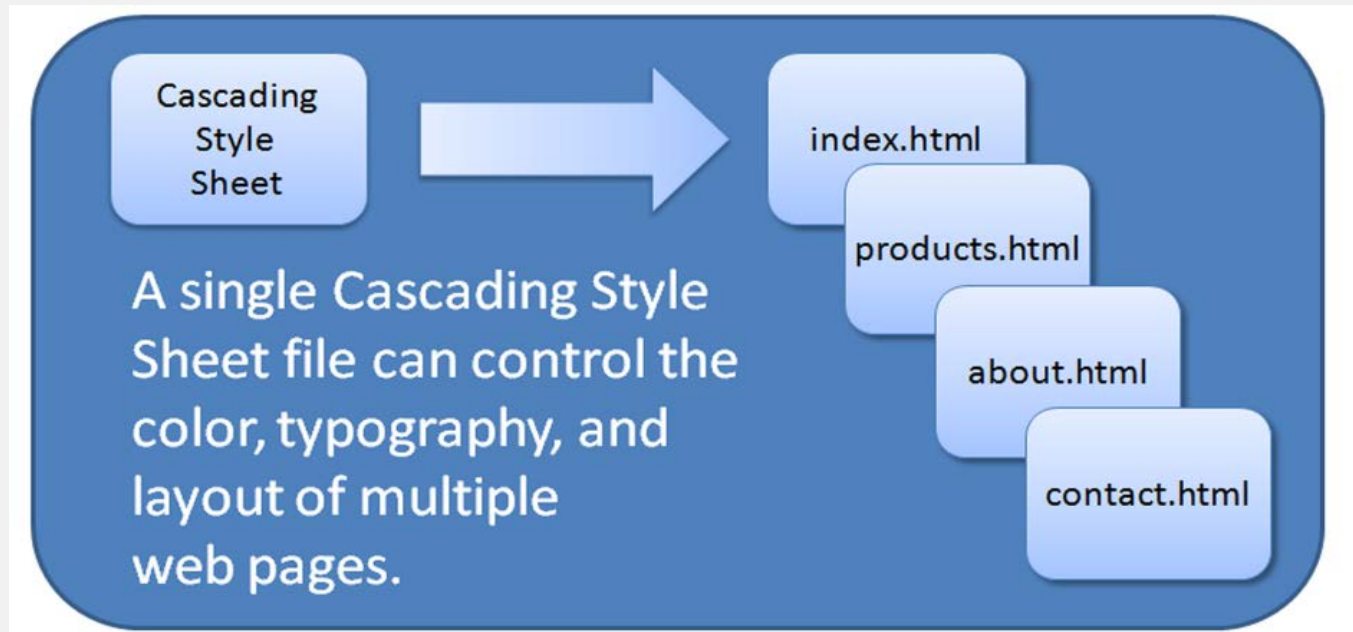
Basics of Web Design: HTML5 & CSS3 New International Edition, 2/e

Author : Terry Felke-Morris

Publisher : Pearson

ISBN : 9781292025469

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Modern web page layouts with CSS

Cascading Style Sheets (CSS)

➢ Style Sheets
  – apply typographical styles and spacing to printed media

➢ CSS
  – provides the functionality of style sheets *(and much more)* for web developers
  – a flexible, cross-platform, standards-based language.

Cascading Style Sheet → index.html, products.html, about.html, contact.html

A single Cascading Style Sheet file can control the color, typography, and layout of multiple web pages.

CSS Advantages

➢ Greater typography and page layout control

➢ Styles can be stored in a separate document and linked to from the web page

➢ Potentially smaller documents

➢ Easier site maintenance

➢ Types of Cascading Style Sheets
  – Inline Styles
  – Embedded Styles
  – External Styles
  – Imported Styles

Types of CSS

- **Inline Styles**
  - Configured in the **body** of the web page
  - Use the style attribute of an HTML tag
  - Apply only to the specific element
- **Embedded Styles**
  - Configured in the **head** section of a web page.
  - Use the HTML <style> element
  - Apply to the entire web page document
- **External Styles**
 - Configured in a separate text file with .css file extension
  - The HTML <link> element in the **head** section of a web page associates it with the .css file
- **Imported Styles**
  - Similar to External Styles (using @import url(....),not covered in this course)

The "Cascade"

➢ Styles applied from external to HTML Attributes

- Site-wide style can be external styles.

- Page specific styles can be embedded or inline styles.
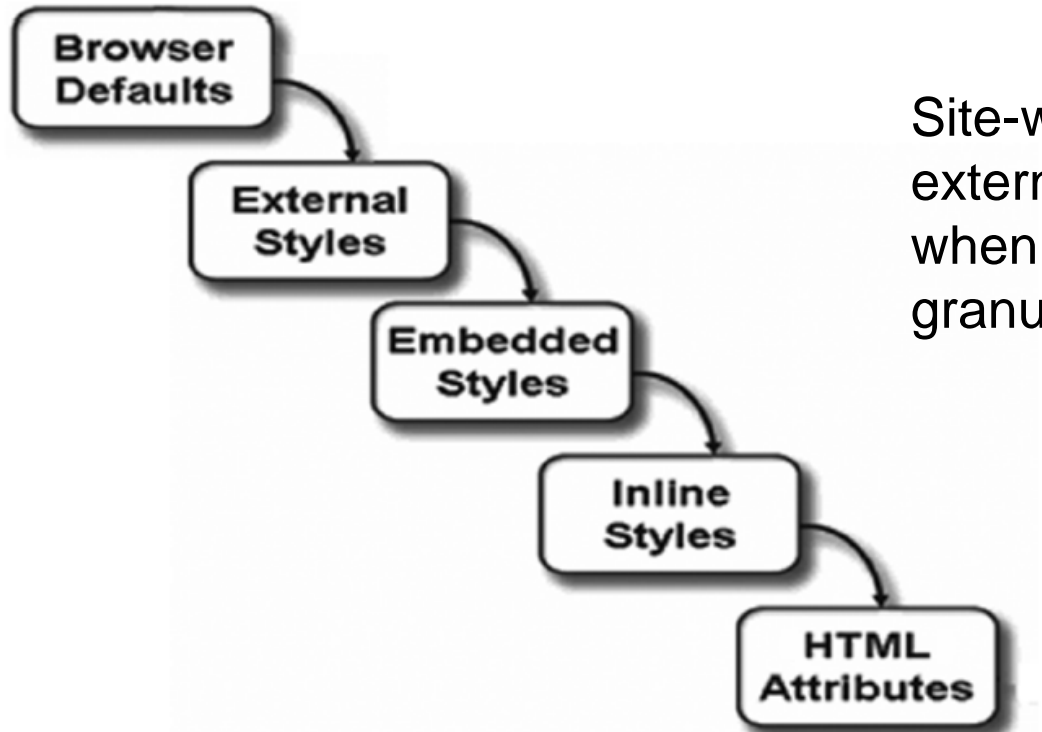
Site-wide styles defined by external styles, but overridden when needed by more granular, page specific styles

CSS Syntax

> Selector can be an HTML name (tag name), a class name, or an id name.
> To configure a web page to display blue text and yellow background.

body { color: blue;
background-color: yellow;}

OR

body { color: #0000FF;
background-color: #FFFF00; }

CSS Syntax for Color Values

Syntax to configure a paragraph with red text:

CSS Syntax	Color Type
p { color: red }	Color name
p { color: #FF0000 }	Hexadecimal color value
p { color: #F00 }	Shorthand hexadecimal (one character for each hexadecimal pair – only used with web safe colors)
p { color: rgb(255,0,0) }	Decimal color value (RGB triplet)
p { color: rgba(255,0,0,0.5) }	CSS3: Decimal color value (RGB triplet) followed by the alpha opacity (a value from 0 to 1). *The CSS3 Color Module is in draft status and is not yet uniformly supported by all browsers.*

❖ Demo of color picker: http://www.w3schools.com/colors/colors_picker.asp

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Exercise CSS01

➢ Create an html file, named "CSS01inline.html" and type the following codes. Then view the result in a browser.

➢ Then, duplicate the heading and the paragraph with your own choice of colors.

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>Inline CSS Example</title>
<meta charset="utf-8">
</head>
<body style="background-color:#F5F5F5;color:#008080;">
<h1 style="background-color:#008080;color:#F5F5F5;">Inline CSS</h1>
<p>This paragraph inherits the styles applied to the body tag.</p>
<p style="color:#333333">This paragraph overrides the text color
style applied to the body tag.</p>
</body>
</html>
```

Configure Embedded CSS with the Style Element

➢ Configured in the head section of a web page.

➢ Use the HTML <style> element

➢ Apply to the entire web page document

➢ Style declarations are contained between the opening and closing <style> tags

Example:

```
<style>
body { background-color: #000000;
        color: #FFFFFF;
} </style>
```

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CSS Embedded Styles

```
<style>
body { background-color: #E6E6FA;
        color: #191970;}
h1 { background-color: #191970;
        color: #E6E6FA;}
h2 { background-color: #AEAED4;
        color: #191970;}
</style>
```

❑ **The body selector sets the global style rules for the entire page.**

❑ **These global rules are overridden for <h1> and <h2> elements by the h1 and h2 style rules.**

Exercise CSS02

- ➢ Copy the 3 html files in the TMD folder to a new folder CSS02.

- ➢ Add embedded CSS codes to the index.html between the <style> tag.

- ➢ View the index.html file to see the effect.
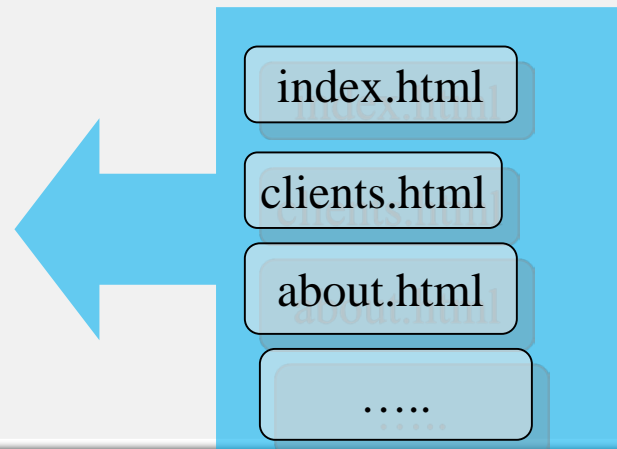
- ➢ Click on other link to see the scope of the effect.

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>Trillium Media Design</title>
<meta charset="utf-8">
<style>
body { background-color: #E6E6FA;
        color: #191970;
}
h1 { background-color: #191970;
     color: #E6E6FA;
}
h2 { background-color: #AEAED4;
     color: #191970;
}
</style>
</head>
```

External Style Sheets

➢ CSS style rules are contained in a text file separate from the HTML documents.

➢ The External Style Sheet text file:

   – extension ".css"

   – contains only style rules

   – does not contain any HTML tags

➢ Multiple web pages can associate with the same external style sheet file.

site.css

```
body {background-color: #E6E6FA;
          color: #000000;
       }
h2 {   color: #003366; }
```

index.html

clients.html

about.html

…..

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The <link> Element

➢ A self-contained tag

➢ Placed in the head section

➢ Purpose: associates the external style sheet file with the web page.

Example: **<link rel="stylesheet" href="color.css">**

rel = *link-types* This attribute describes the relationship from the current document to the anchor specified by the href attribute.

External Style Sheet color.css :

```
body { background-color: #0000FF;
        color: #FFFFFF;
}
```

Exercise CSS03

➢ Type the code below and save it to "CSS03ext.html".

➢ Type the external CSS style shown in the previous slide and save it as "color.css"

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>External Styles</title>
<meta charset="utf-8">
<link rel="stylesheet" href="color.css">
</head>
<body>
<p>This web page uses an external style sheet.</p>
</body>
</html>
```

Exercise CSS04

➢ Based on exercise CSS02, copy all the 3 html file to a new folder CSS04, modify the codes in all 3 files to add an extenal CSS style sheet named "mycolor.css".

➢ Copy the embedded CSS style in exercise CSS02 (the codes bewteen the <style> … </style> tags) to a separate file named "mycolor.css".

➢ View the result in browser. Navigate to all 3 pages in the browser and observe the effect.

Using CSS with "class"

➢ **class** Selector

  – Apply a CSS rule to ONE OR MORE elements on a web page

  – Does not associate the style to a particular HTML element

➢ Configure with **.classname**

➢ The sample creates a class called "new" with red italic text.

➢ To use the class, code the following :

```
<style>
.redtext { color: #FF0000;
      font-style: italic;
      }
</style>
```

`<p class="redtext">This is text is red and in italics</p>`

This is text is red and in italics

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Using a CSS id Selector

➤ **id** Selector
  – Apply a CSS rule to ONLY ONE element on a web page.

➤ Configure with #idname

```
<style>
#leftpanel { color: #FF0000;
            font-size:2em;
            font-style: italic;
            }
</style>
```

➤ The sample creates an id called "new" with red, large, italic text.

➤ To use the id, code the following :
  `<p id="leftpanel">This is text is red, large, and in italics</p>`

This is text is red, large, and in italics

Using a CSS Descendant Selector

➢ **Descendant** Selector

- – Apply a CSS rule within the context of the container (parent) element.
- – Sometimes called a **contextual** selector.

➢ Configure by listing the container selector followed by the selector you are styling.

e.g.
The sample below specifies a green text color for only the paragraph elements located *within* the footer element.

```
<style>
footer  p {color: #00ff00; }
</style>
```

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Example with <div>

➢ <div> is a block-display element.

➢ Embedded CSS:

           <style>

           .myfooter { font-size: small;

                        text-align: center; }

           </style>

➢ HTML

    <div class="myfooter">Copyright © 2011</div>
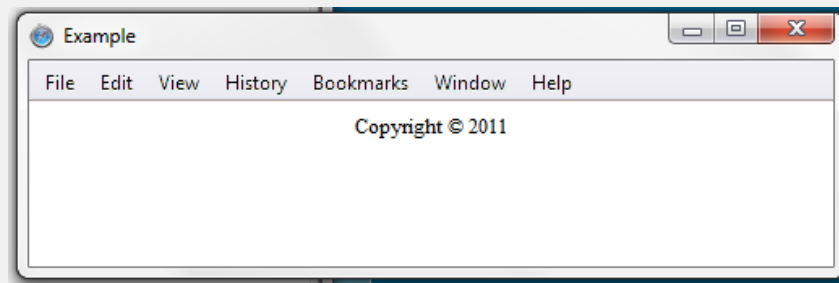
Example with

- ➢ An inline-level element
- ➢ Purpose: Configure a specially formatted area displayed in-line with other elements, such as within a paragraph.
- ➢ There is no line break before and after the .
- ➢ Embedded CSS:

    <style> .companyname { font-weight: bold;

    font-family: Georgia, "Times New Roman", serif;

    font-size: 1.25em; }

     </style>
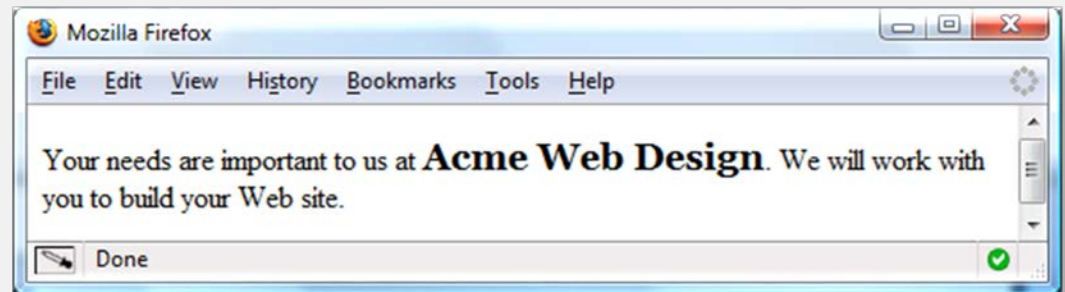
- ➢ HTML:

    <p>Your needs are important to us at Acme Web Design. We will work with you to build your website.</p>

Exercise CSS05

- ➤ Type the codes as shown on the right and in the following slide (modified from CSS02's index.html).

- ➤ Save it to "CSS05.html"

- ➤ View the page in the browser

- ➤ Modify the CSS properties and observe how the page is affected.

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>Trillium Media Design</title>
<meta charset="utf-8">
<style>
body { background-color: #FFFFFF;
color: #191970; }
h1 { background-color: #191970;
      color: #E6E6FA;
      margin-bottom: 0;}
h2 { color: #6A6AA7; }
nav { background-color: #E2E2EF; }
.companyname { color: #6A6AA7; }
footer { color: #666666; }
</style>
</head>
```

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Exercise CSS05 (cont.)

```html
<body><header> <h1>Trillium Media Design</h1></header>
<nav><a href="index.html">Home</a>  
    <a href="services.html">Services</a>  
    <a href="contact.html">Contact</a>
</nav>
<div> <h2>New Media and Web Design</h2>
 <p><span class="companyname">Trillium Media Design</span> will bring your
 company&rsquo;s Web presence to the next level.<br>
 We offer a comprehensive range of services:</p>
  <ul>
    <li>Website Design</li>
    <li>Interactive Animation</li>
    <li>E-Commerce Solutions</li>
    <li>Usability Studies</li>
    <li>Search Engine Optimization</li>
  </ul>
  <h2>Meeting Your Business Needs</h2>
  <p>Our expert designers are creative and eager to work with you.</p>
</div>
<footer>  Copyright &copy; 2014 Your Name Here </footer>
</body>
</html>
```

Web Graphics

Image Type	File Extension	Com-pression	Trans-parency	Animation	Colors	Progressive Display
Graphic Interchange Format (GIF)	.gif	Lossless	Yes	Yes	256	Inter-lacing
Joint Photographic Experts Group (JPEG)	.jpg or .jpeg	Lossy	No	No	Millions	Progressive
Portable Network Graphic (PNG)	.png	Lossless	Yes (multiple levels)	No	Millions	Inter-lacing

Web Graphics

➤ The Image Element <img>

<img src="cake.gif" alt="birthday cake" height="100" width="100">

- **src** Attribute : File name of the graphics file.
- **alt** Attribute :Configures alternate text content (description), e.g. image tag.
- **height** Attribute: Height of the graphic in pixels
- **width** Attribute : Width of the graphic in pixels

Web Graphics

➢ Alignment (Attribute **align**)

Vertical Alignment

align="top"

default alignment

align="middle"

Horizontal Alignment

The XHTML tag for this star image is coded with align="right". This causes the text to be placed to the left and wrap around the image. If the text continues, it will wrap under the image.

The XHTML tag for this star image is coded with align="left". This causes the text to be placed to the right and wrap around the image. If the text continues, it will wrap under the image.

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Web Graphics

align = ?

hspace= Attribute

vspace= Attribute

The XHTML tag for this coffee cup image is coded with align="left". This causes the text to be placed to the right and wrap around the image. If text continues it will wrap around the image.

The XHTML tag for this coffee cup image is coded with align="left" and hspace="12". This causes the text to be placed a little further to the right and adds 12 pixels of space on either side of the image.

The XHTML tag for this coffee cup image is coded with align="left" and vspace="12". This causes the text to be placed to the right of the image and adds 12 pixels of space above and below the image.

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Image Links

- To create an image link use an anchor element to contain an image element

<img src="home.gif" height="19" width="85" alt="Home">

- Browsers automatically add a border to image links.
- Configure CSS to eliminate the border:

img {border:0 }

CSS background-image Property

By default, background images tile (repeat)

body { background-image: url(background1.gif); }
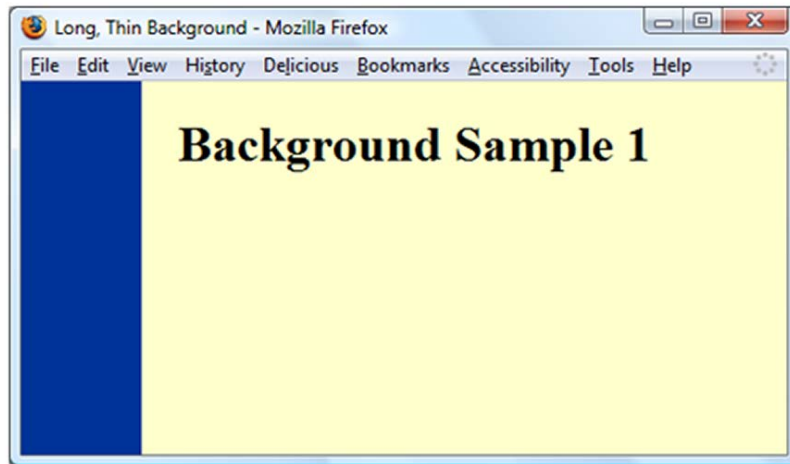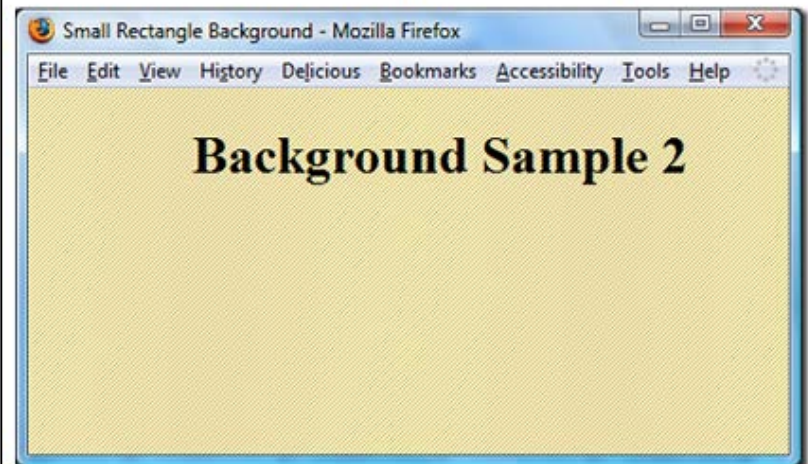
Using background-repeat

```
h2 { background-color: #d5edb3;
     color: #5c743d;
     font-family: Georgia, "Times New Roman", serif;
     padding-left: 30px;
     background-image: url(trilliumbullet.gif);
     background-repeat: no-repeat;
}
```

trilliumbullet.gif:

Using background-repeat
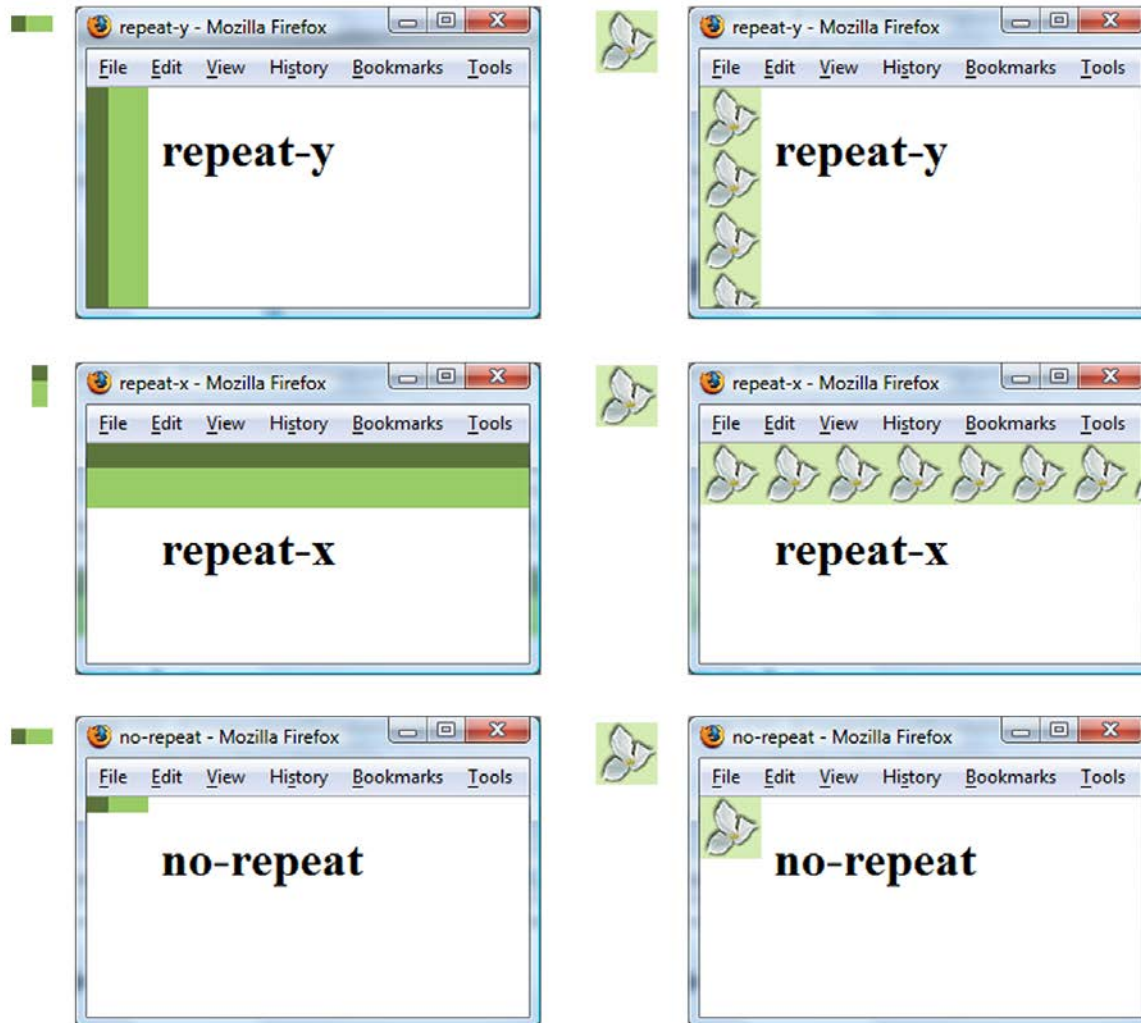
CSS3 Multiple Background Images

body { background-color: #f4ffe4;
    color: #333333;

      background-image: url(trilliumgradient.png);

      background: url(trilliumfoot.gif)

        no-repeat bottom right,

      url(trilliumgradient.png); }

Configure List Markers with CSS

ul {list-style-image: url(trillium.gif); }

Exercise CSS06

➢ Download the trillium4.zip.

➢ Create a folder named CSS06. Copy the example files in trillium4.zip and study the codes and practice what you see in the previous slides by making changes to CSS styles.

➢ Observe the effects on

– index.html

– index2.html

Exercise CSS07

➢ Modify the files for exercise CSS06 to obtain the following result. Save in folder name CSS07.

Configure Typeface with CSS

Font-family Category	Font Typeface
serif	Times New Roman, Georgia, Times
sans-serif	Arial, Verdana, Geneva
monospace	Courier New, Lucida Console
cursive	Brush Script MT, Comic Sans MS
fantasy	Jokerman, Curlz MT

p { font-family: Arial, Helvetica, sans-serif; }

- font-size property

  p { font-size: 90%: }

- font-weight property

  li {font-weight: bold; }

- font-style property

  footer { font-style: italic; }

- line-height property

  p { line-height: 120%; }

Align ,Indent, Width, Height with CSS

- text-align property

  h1 { text-align: center; }

- text-indent property

  p { text-indent: 5em; }

- width property

  h1 { width: 80%; }

- height property

  h1 { height: 100px; }

Exercise CSS08

> ➢ **Practice changing some of the font properties as shown in the previous slides to the** **index.html** **used in exercise CSS07.**

The Box Model

➢ Content

   – Text & web page elements in the container

➢ Padding

   – Area between the content and the border

➢ Border

   – Between the padding and the margin

➢ Margin

   – Determines the empty space between the element and adjacent elements

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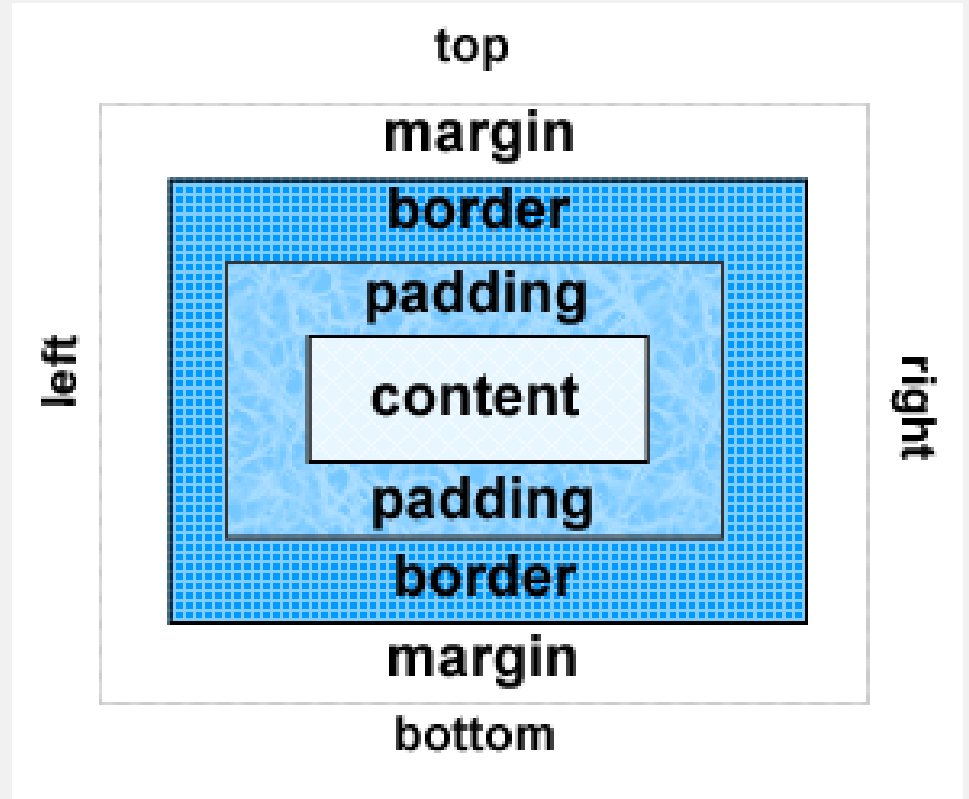
Margin with CSS

➢ The margin property

➢ Related properties:

  – margin-top, margin-right, margin-bottom, margin-left

➢ Configures empty space between the element and adjacent elements

  – Syntax examples

    h1 { margin: 0; }

    h1 { margin: 20px 10px; }

    h1 { margin: 10px 30px 20px; }

    h1 { margin: 20px 30px 0 30px; }
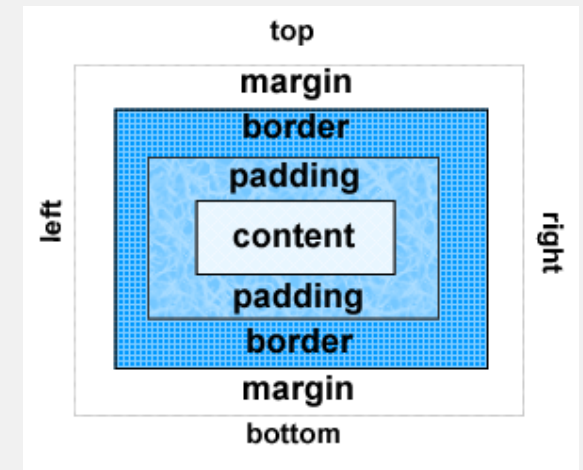
Padding with CSS

- The padding property
- Related properties:
  - padding-top, padding-right, padding-bottom, padding-left
- Configures empty space between the content of the HTML element (such as text) and the border
- Syntax examples

  h1 { padding: 0; }

  h1 { padding : 20px 10px; }

  h1 { padding : 10px 30px 20px; }

  h1 { padding : 20px 30px 0 30px; }
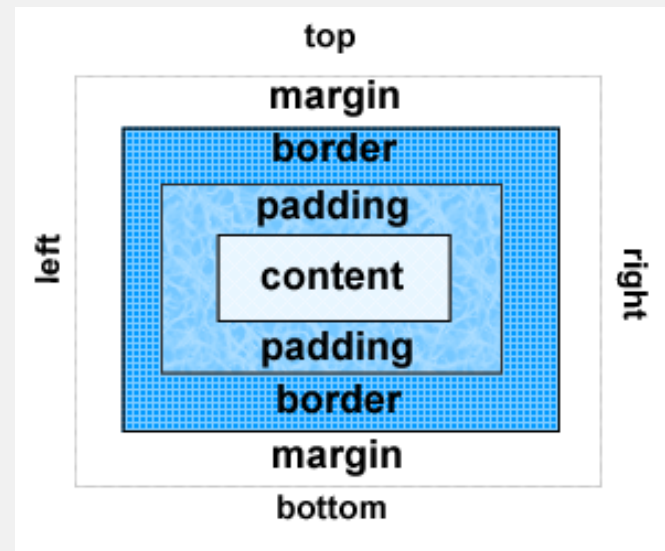
Exercise CSS09

➢ Type the codes, save it as "CSS09.html"

➢ Use Google Chrome developer tools to study the effect of the box properties.

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>Examples of the Box Model</title>
<meta charset="utf-8">
<style>
body { background-color: #FFFFFF;
}
h1 { background-color: #D1ECFF;
        padding-left: 60px;}
#box { background-color: #74C0FF;
        margin-left: 60px;
        padding: 5px 10px;
}
</style>
</head>
<body>
<h1>Examples of the Box Model</h1>
<div id="box">HTML elements display as boxes on web pages.
This div element is configured to have a blue background.
HTML elements display as boxes on web pages.
This div element is configured to have a blue background. </div>
</body>
</html>
```

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The CSS border Property

➢ Configures a border on the top, right, bottom, and left sides of an element

➢ Consists of
- border-width
- border-style
- border-color

h2 { border: 2px solid #ff0000 }

Heading with Border

Configuring Specific Sides of a Border

➢ Use CSS to configure a line on one or more sides of an element

- – border-bottom
- – border-left
- – border-right
- – border-top

h2 { border-bottom: 2px solid #ff0000 }

Heading with Border

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Centering Page Content with CSS

#container { margin-left: auto;

margin-right: auto;

width:80%; }

Page Layout Basics

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>CSS</title>
<meta charset="utf-8">
<style>
.div1 {width:200px;
        height:200px;
        background-color:#D1ECFF;
        border: 3px dashed #000000;
        padding:5px;
}
.div2 {width:100px;
        height:100px;
        background-color:#ffffff;
        border: 3px ridge #000000;
        padding:5px;
        margin:10px;
}
</style>
</head>
<body>
<div class="div1">
   This is the first box.
</div>
<div class="div2">
   This is the second box.
</div>

</body>
</html>
```
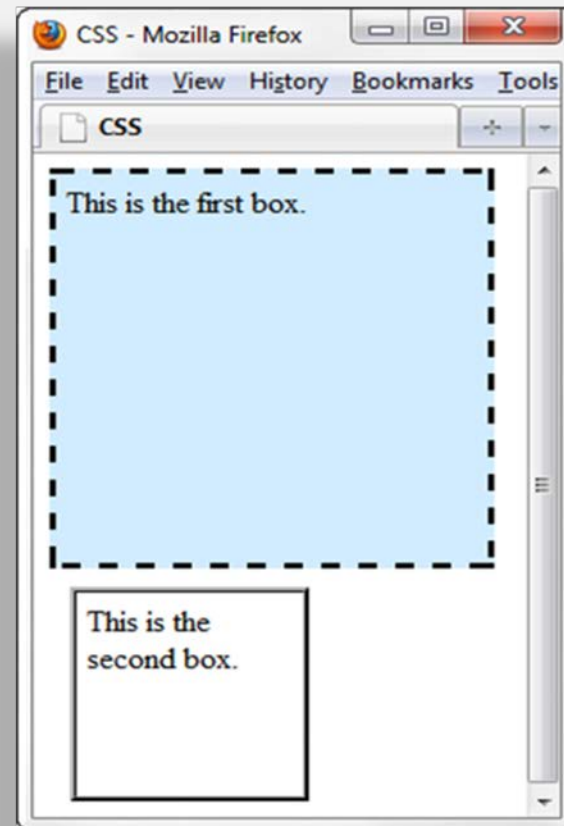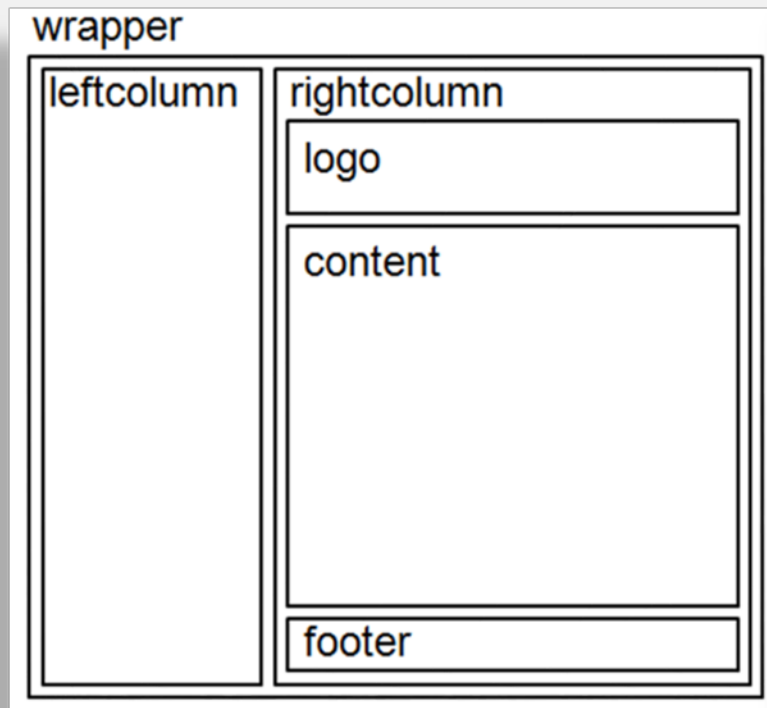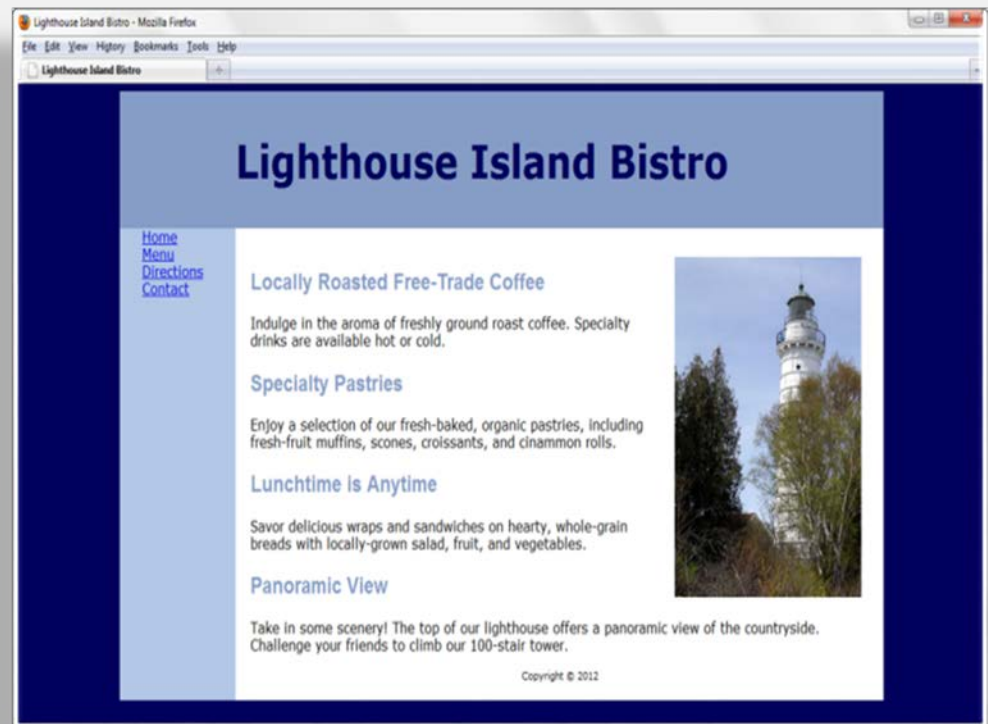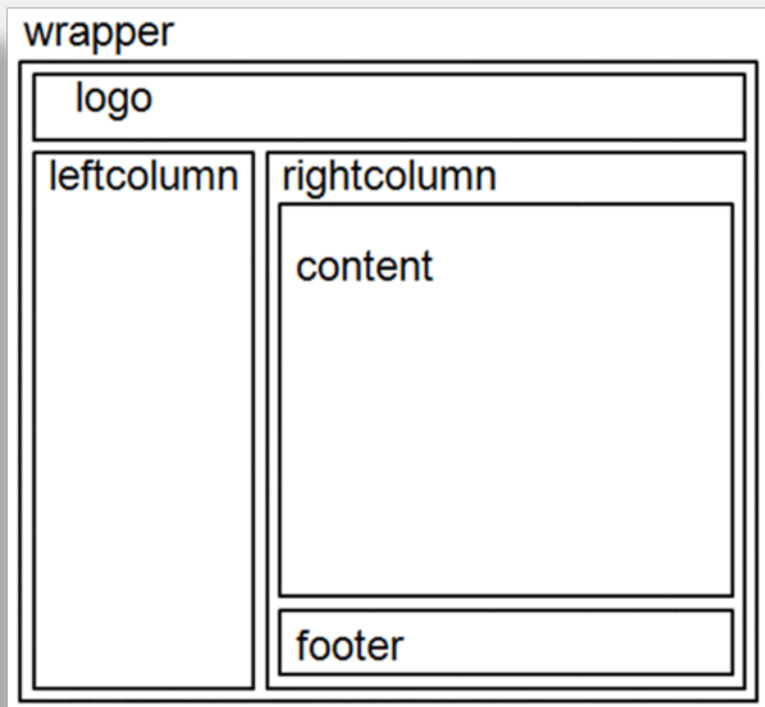
Page Layout Basics

```html
<!DOCTYPE html>
<html lang="en">
<head>
<title>CSS</title>
<meta charset="utf-8">
<style>
.div1 {width:200px;
       height:200px;
       background-color:#D1ECFF;
       border:3px dashed #000000;
       padding:5px;
}
.div2 {width:100px;
       height:100px;
       background-color:#ffffff;
       border:3px ridge #000000;
       padding:5px;
       margin:10px;
}
</style>
</head>
<body>
<div class="div1">
  This is the outer box.
  <div class="div2">
  This is the inner box.
  </div>
</div>

</body>
</html>
```
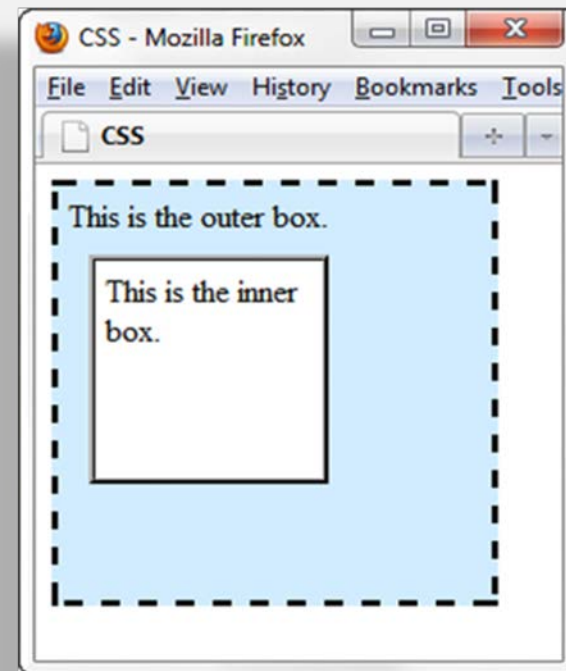
CSS Page Layout Two Columns (left nav)
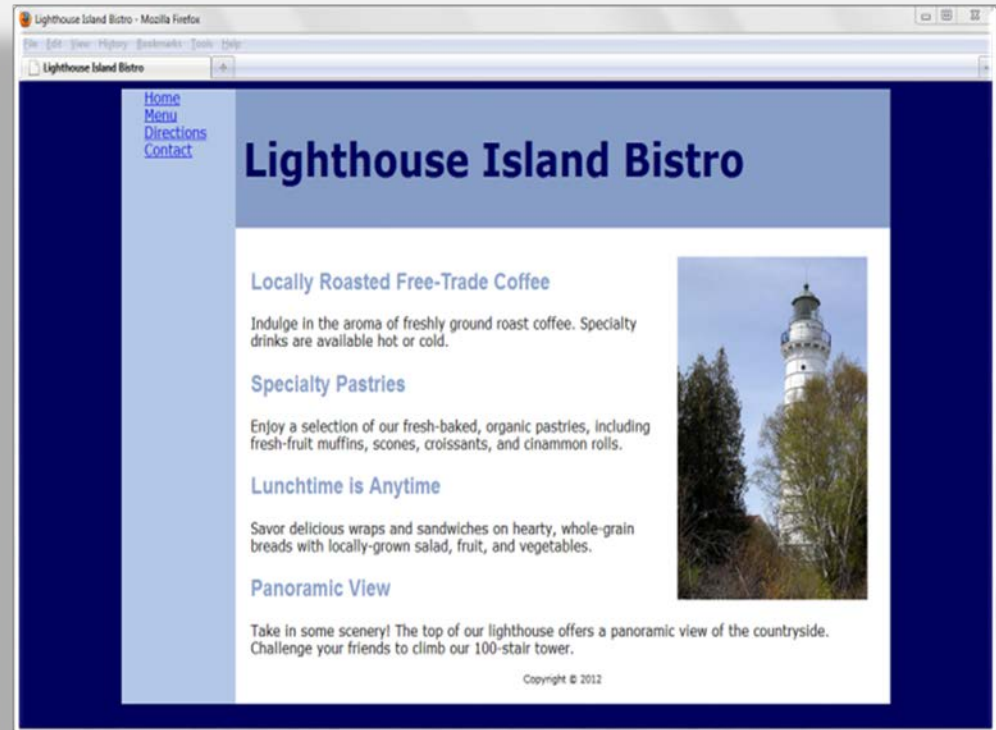
CSS Page Layout Two Columns (top logo, left nav)

Configure Hyperlinks in an unordered List

➢ **Vertical Navigation**

```
<div id="leftcolumn">
<ul>
    <li><a href="index.html">Home</a></li>
    <li><a href="menu.html">Menu</a></li>
    <li><a href="directions.html">Directions</a></li>
    <li><a href="contact.html">Contact</a></li>
</ul>
</div>
```

➢ **CSS removes the list marker and underline:**

```
#leftcolumn ul { list-style-type: none; }
#leftcolumn  a { text-decoration: none; }
```

Configure Hyperlinks in an Unordered List

➢ Horizontal Navigation

```
<div id="nav">
<ul>
    <li><a href="index.html">Home</a></li>
    <li><a href="menu.html">Menu</a></li>
    <li><a href="directions.html">Directions</a></li>
    <li><a href="contact.html">Contact</a></li>
</ul>
</div>
```

Home   Menu   Directions   Contact

```
nav ul { list-style-type: none;}
nav a { text-decoration: none;
        padding-right: 10px; }
nav li {  display: inline; }
```

➢ CSS removes the list marker, removes the underline, adds padding, and configures the list items for inline display – even if it is actually a block element – such as a
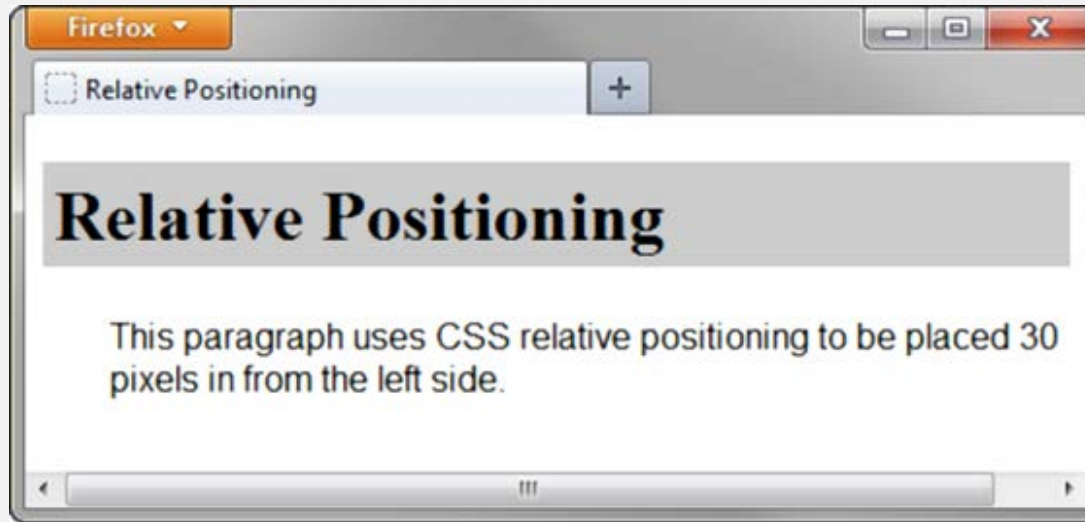
Fixed Positioning

➢ **nav { position: fixed; }**

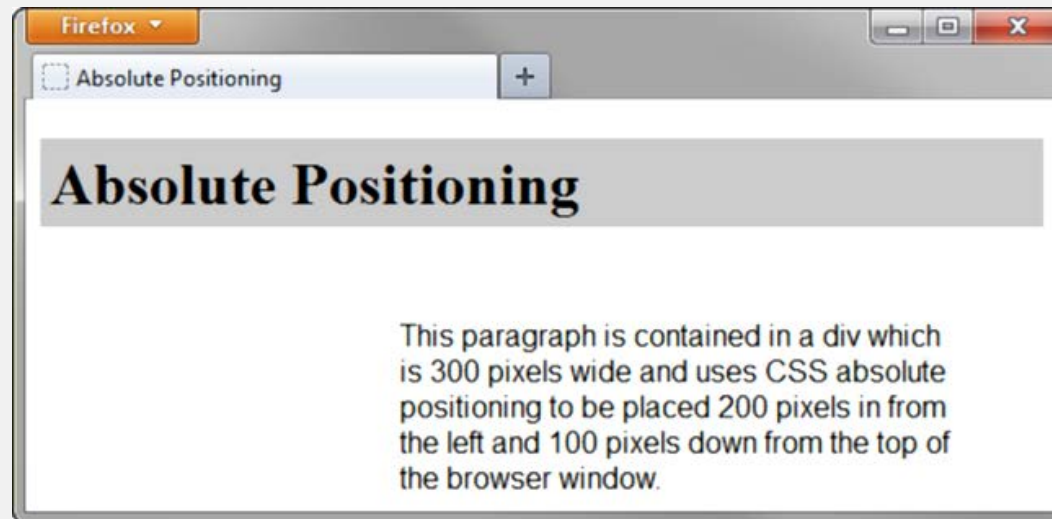

Navigation stays in place when the page is scrolled
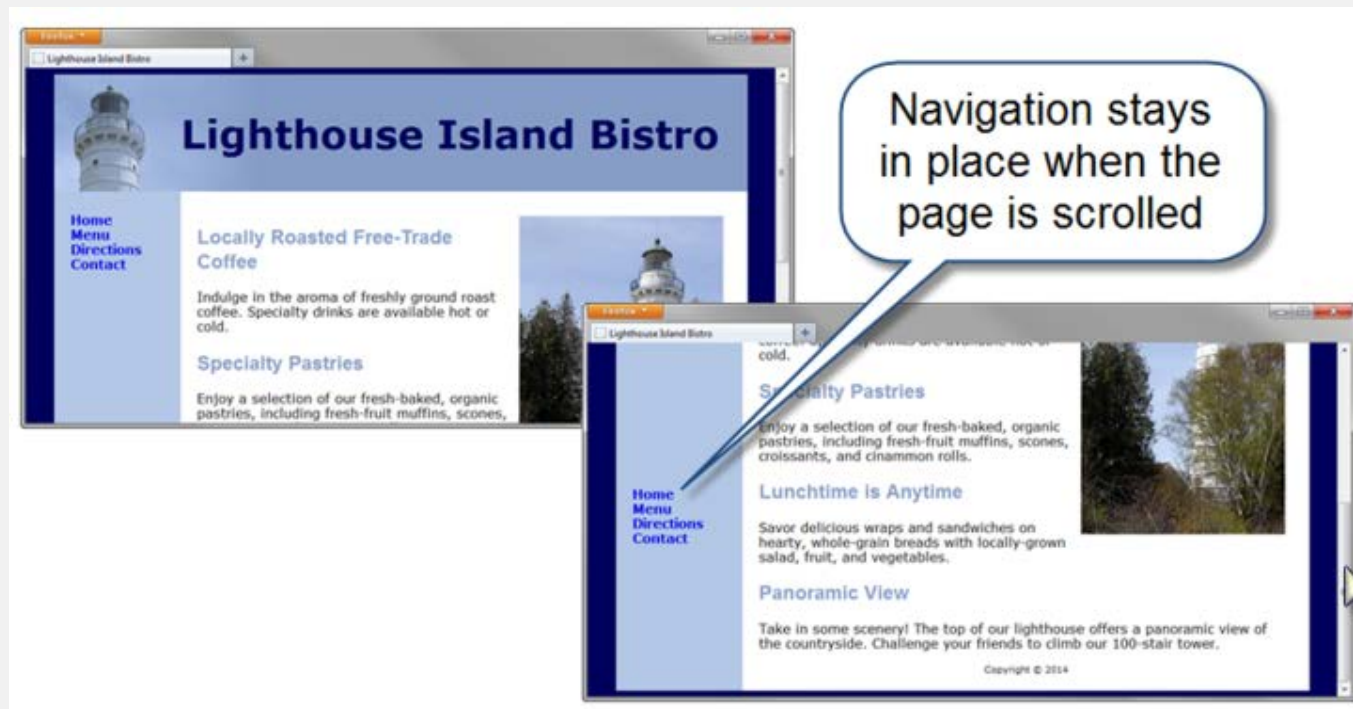
Relative Positioning

p { position: relative;
    left: 30px;
    font-family: Arial, sans-serif; }

Changes the location of an element in relation to where it would otherwise appear in normal flow

Absolute Positioning


```
p { position: absolute;
    left: 200px;
    top: 100px;
    font-family: Arial, sans-serif;
    width: 300px; }
```

Precisely specifies the location of an element outside of normal flow in relation to its first parent non-static element

Exercise CSS10

➤ Study examples in "two_column.zip".

➤ Change the CSS style properties to observe the effects on the page and familiarize yourself with the various page layouts.

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➤ Remember to try out the same file in different browsers to see if there are differences.

➤ Copy all the exercise files to the week03 folder for progress assessments.

➤ More about CSS3: http://www.w3schools.com/